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Familiarization Guide

HP Vectra XA PC
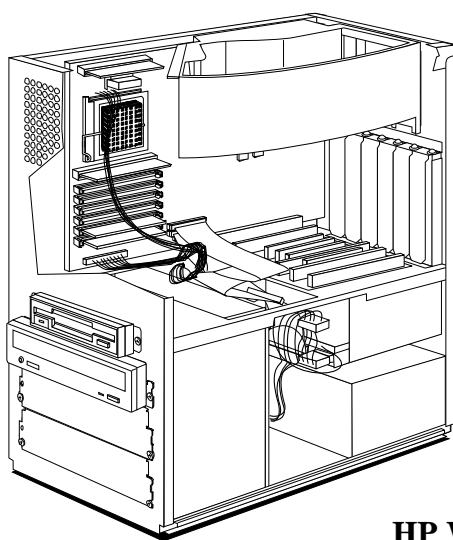
HP Vectra XA

5/xxx PC

HP Vectra XA MT PC

This guide is for experienced technicians who have already completed the HP Vectra computer family training course. In particular, it assumes that the reader is already familiar with the *HP Vectra XA 6/xxx* and *HP Vectra XM 5/xxx Series 4 PCs*, which have a similar structure.

This document serves as a self-paced training guide, designed to train you for repair of the computer, and only contains repair-specific information. For information on the installation of accessories, see the *User's Guide* and the online documents that are supplied with the computer.

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HP Vectra XA 5/xxx PC

The major new hardware features are:

- New, high performance, Pentium MMX processor.

- 512 KB cache memory on all models.

- New and faster version of Matrox Millennium PCI graphics controller.

- New 10BT/100BT PCI network board on all models.

External Features

Network connectors:
100 BaseT supports Remote Wake-Up (RWU) only.
10 BaseT supports Remote Power-On (RPO) as well as RWU.

Front label does not show processor speed or series information. Instead this information appears on a label on the lower front recess (desktop models) or on the right hand side panel (minitower models).

100   10

Parallel   **Serial A**   **Serial B**

2 ✕ USB

MGA

```
         Model XA 5/200
Wty: WBK@ Prod: D3993A #ABA
Sup: SAB@ S/N:  FR63412345
```

Serial B

Serial A

Voltage selection   Power connector
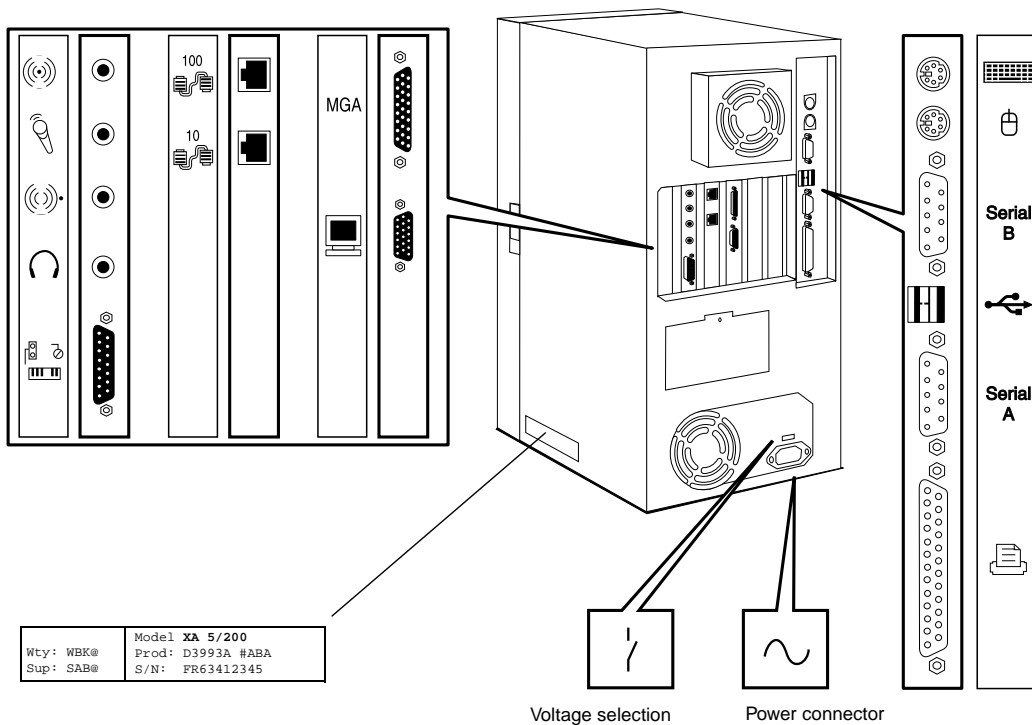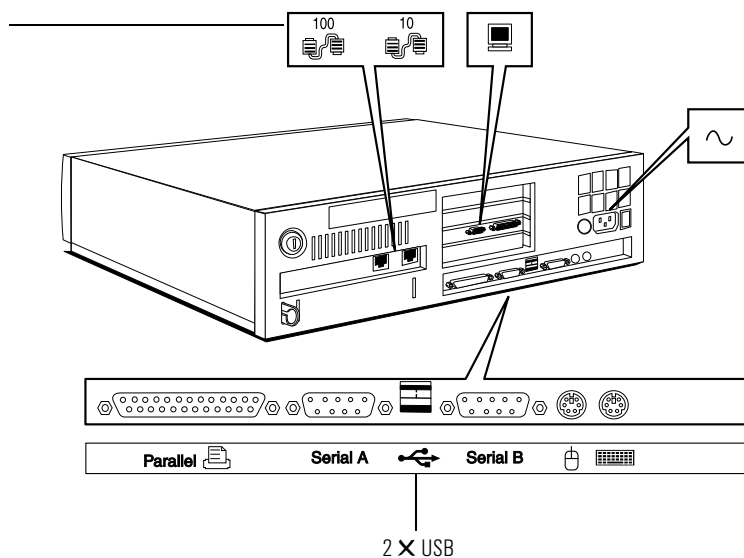
Installing Main Memory Modules

- Each memory bank that you use must contain a pair of identical memory modules, installed in the pair of sockets for that bank.

- The three memory banks (A, B, C) may be filled in any order, but it is advisable, for performance reasons, to fill them in the order A then B then C.

- Memory can be upgraded in increments of 8 MB, 16 MB, 32 MB or 64 MB (by installing pairs of 4 MB, 8 MB, 16 MB or 32 MB modules).

- HP does not support PCs in which the user has installed non-HP memory modules.

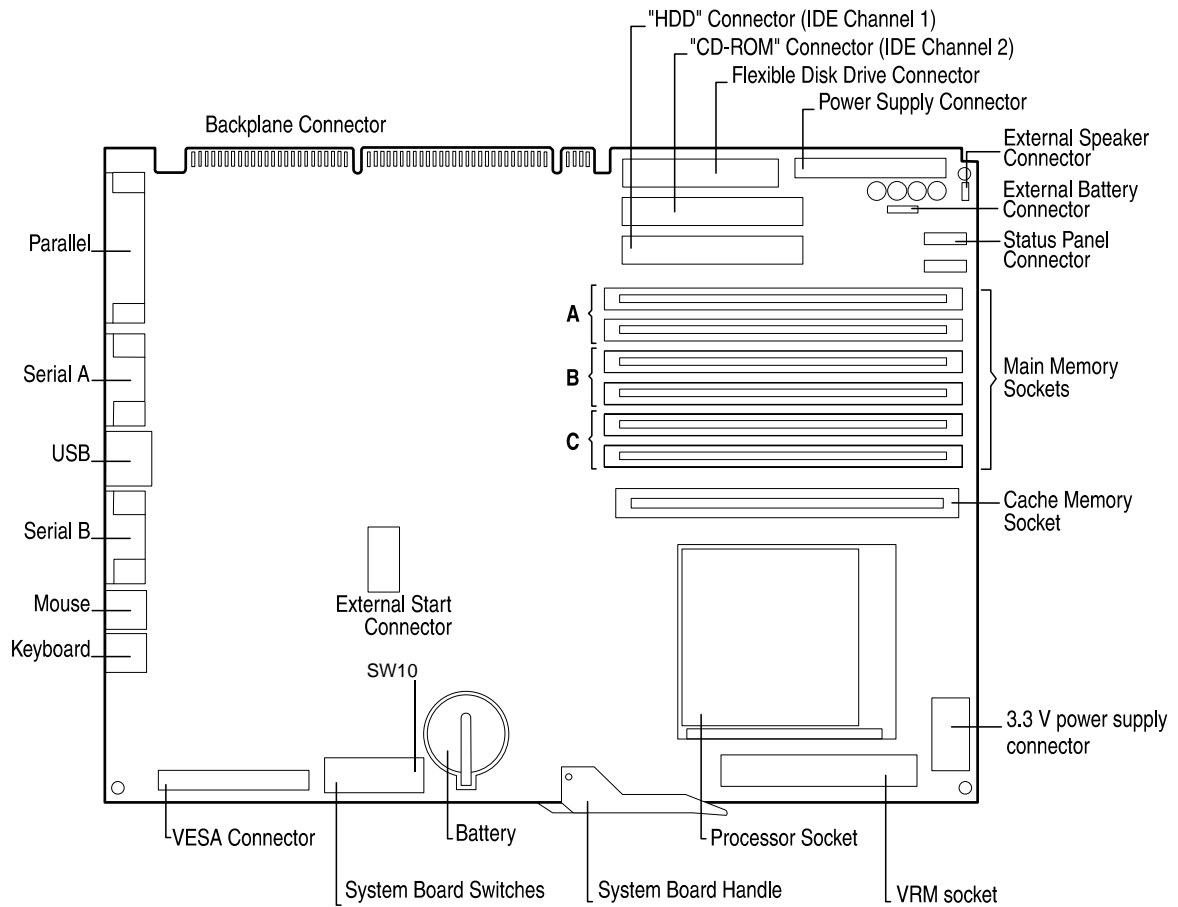| Initial Configuration	Example Upgrade Paths	
C2 empty C1 empty B2 empty B1 empty A2 8 MB or 16 MB A1 8 MB or 16 MB	Models are supplied with 16 MB or 32 MB of main memory using a pair of 8 MB or 16 MB, 60 ns, EDO memory modules. The main memory capacity can be extended to 144 MB or 160 MB by installing a further two pairs of 32 MB memory modules. This can be further extended to 192 MB by removing the original pair of modules, and replacing them with a pair of 32 MB modules.	32 MB 32 MB 32 MB 32 MB 8 MB or 16 MB 8 MB or 16 MB
C2 empty C1 empty B2 empty B1 empty A2 8 MB or 16 MB A1 8 MB or 16 MB	Banks may be filled in any order, but it is recommended to fill them in the order of A then B then C. Any banks which are occupied must **always** be filled with a **pair** of modules of **identical** capacity, type and speed. Different banks can be occupied by different capacities of modules, such as a pair of 32 MB modules, a pair of 16 MB modules, and a bank of 32 MB modules.	32 MB 32 MB 4 MB 4 MB 8 MB or 16 MB 8 MB or 16 MB

System Board

"HDD" Connector (IDE Channel 1)
"CD-ROM" Connector (IDE Channel 2)
Flexible Disk Drive Connector
Power Supply Connector

Backplane Connector

External Speaker Connector
External Battery Connector
Status Panel Connector

Parallel

Serial A

USB

Serial B

Mouse

Keyboard

A

B

C

Main Memory Sockets

Cache Memory Socket

External Start Connector

SW10

3.3 V power supply connector

VESA Connector

Battery

Processor Socket

System Board Switches

System Board Handle

VRM socket

Replacing the System Board

1.

┌───┐
│   Remove the old system board │
└───┘

2.

┌───┐
│   Install the new system board │
└───┘

3.

┌──┐
│   Update the product │
│   identification field │
│ ┌────────────────────────────────┐   │
│ │ Turn the PC off. Set SW10 of the │   │
│ │ system board switches to **closed**. │   │
│ └────────────────────────────────┘   │
│   │
│ ┌────────────────────────────────┐   ╭──────────────────────╮│
│ │ Turn the PC on. Wait until the │   │ **Product Flag cleared,** ││
│ │ POST displays this message: │   │ **set switch to the**   ││
│ └────────────────────────────────┘   │ **open position before** ││
│   │ **rebooting**   ││
│ ┌────────────────────────────────┐   ╰──────────────────────╯│
│ │ Turn the PC off. Set SW10 of the │   │
│ │ system board switches to **open**. │   │
│ └────────────────────────────────┘   │
│   │
│ ┌────────────────────────────────┐   ╭──────────────────────╮│
│ │ Turn the PC on. Wait until the │   │ **0041-49 Invalid**   ││
│ │ POST stops at the 85% stage.   │   │ **internal product type,** ││
│ └────────────────────────────────┘   │ **correct with F2.**   ││
│   ╰──────────────────────╯│
│ ┌────────────────────────────────┐   │
│ │ Select **Vectra X series**   │   │
│ │ from the menu.   │   │
│ └────────────────────────────────┘   │
│   │
│ ┌────────────────────────────────┐   │
│ │ Follow the instructions that are │   │
│ │ displayed on the screen.   │   │
│ └────────────────────────────────┘   │
└──┘

4.

┌───┐
│ Flash the System ROM with the latest version of the System BIOS │
└───┘

MMX Processor

The new P55C processors, from Intel, are Pentium processors, with the MMX multimedia extension instructions added to the instruction set.

P55C processors require a different voltage supply. Only use the voltage regulator model (VRM) that was supplied with the processor.

	VRM 3.46 V	VRM 2.8 V
P54CS/166 & P54CS/200	5063-7939	Not compatible
P55C/166 & P55C/200	Not compatible	0950-3188

How to Identify the VRM

The 0950-3188 VRM has the characters "2.8V" marked on it. The 5063-7939 VRM has only the word "Pentium" or a voltage of the form "3.xxV" marked on it.

How to Identify the Processor

*HP Vectra XA PC*s exist in two different forms: one with a system board for a Pentium or MMX processor, the other with a system board for a Pentium Pro processor.

All models bear the same front panel logo. Other sources of information must be sought, in order to ascertain what type of processor is installed.

```
Model XA 5/200
Wty: WBK@    Prod: D3993A #ABA
Sup: SAB@    S/N:  FR63412345
```

- The serial label. This is found on the lower front recess of desktop models, and on the lower part of the right side panel of minitower models. It gives the following information:

  ❐ Processor type (5/ = Pentium P54 or MMX P55; 6/ = Pentium Pro)
  ❐ Processor frequency (/166 = 166 MHz; /200 = 200 MHz)
  ❐ Product number (D3993A in the example).

  The product number is particular useful, since it can be looked up in the HP Vectra PC Service Handbook.

- The Intel Inside label. Only models containing an MMX (P55C) processor have the MMX logo (shown at the top left of the previous page).

- The BIOS version number. This is displayed at the top of the summary screen (obtained by typing [Esc] whilst the initial Vectra logo is being displayed during the Power-On Self Test phase).

Model	Processor	BIOS Version Number
HP Vectra XA 5/xxx PC	Pentium P54CS or MMX P55C	HA.07.xx
HP Vectra XA 6/xxx PC	Pentium Pro	GZ.07.xx

- The ultimate solution is to release the lever on the zero insertion force (ZIF) socket, and to remove the heat-sink and processor together, as a single unit. Look at the underside of the processor. Only P55Cs are marked with the words "MMX^{TM} tech".

Precautions When Replacing the Power Supply

With the minitower package, always check the position of the voltage selection switch.
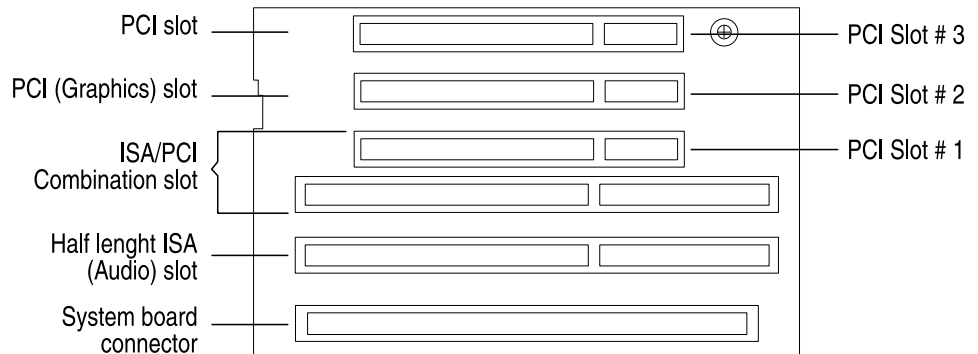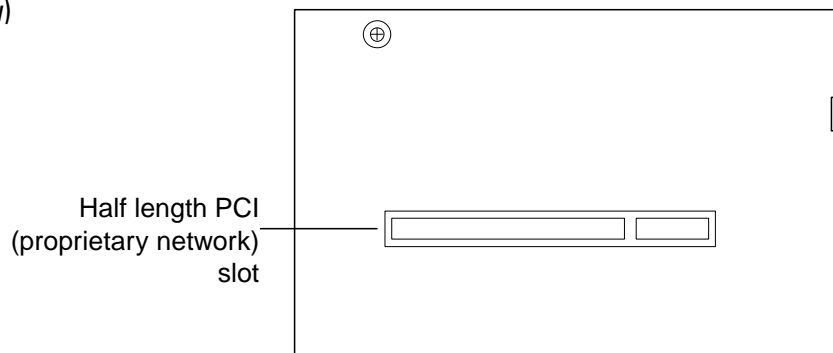
USB Connector

The *HP Vectra XA 5/xxx* and *VL 5/xxx Series 5 PC*s are the first Vectra PCs to have a pair of USB connectors fitted as standard. When devices become available on the market, they can be activated from the *Setup* program.
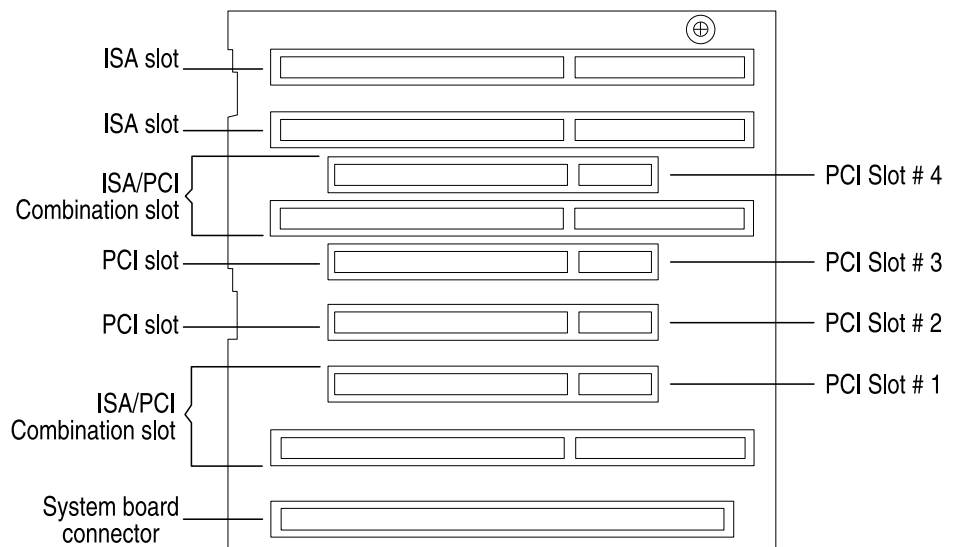
Backplanes

XA Desktop (front view)

PCI slot — PCI Slot # 3

PCI (Graphics) slot — PCI Slot # 2

ISA/PCI Combination slot — PCI Slot # 1

Half lenght ISA (Audio) slot

System board connector

XA Desktop (rear view)

Half length PCI (proprietary network) slot

XA Minitower (top view)

ISA slot

ISA slot

ISA/PCI Combination slot — PCI Slot # 4

PCI slot — PCI Slot # 3

PCI slot — PCI Slot # 2

ISA/PCI Combination slot — PCI Slot # 1

System board connector

Windows Operating System

Some models are preloaded with the Windows NT 4.0 WS operating system.

TopTools 2.0 remote flash and NT local flash.

Graphics Controller Board

The new Matrox MGA Revision 6.0 Millennium board requires new drivers, and a new 2 MB video memory upgrade part (D3557B).

576-006 marked on the board.

2 MB memory chips

Top and bottom halves of the upgrade socket. (For the installation of a video memory upgrade module or the Matrox MPEG module).

Display connector

Configuration switches. (Set to their bottom position for normal operation).
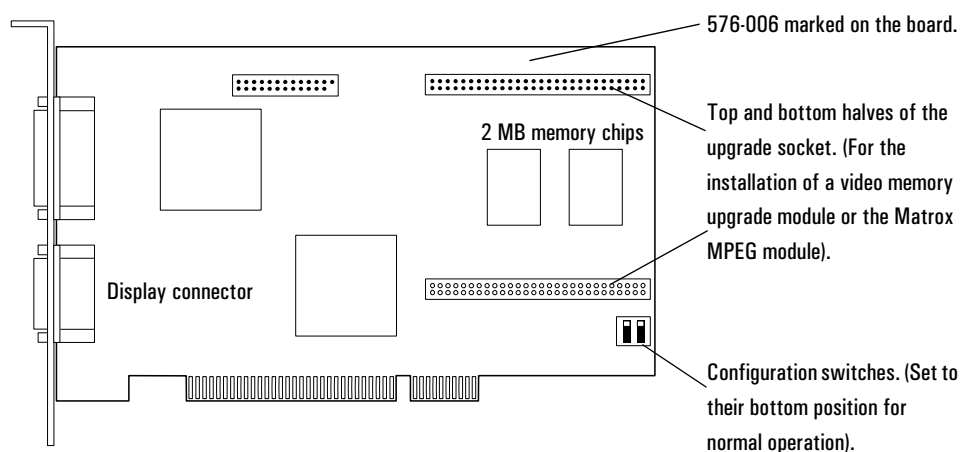
Version of Matrox	Rev. 5.0	Rev. 6.0
Used on	HP Vectra XM 5/xxx Series 4 PC	HP Vectra XA 5/xxx PC
Exchange part	D3568-69005	D3568-69006
2 MB upgrade	D3557A or D3557B	D3557B only
2 MB upgrade replacement part	D3557-63001 or D3557-63002	D3557-63002 only
Video drivers for Rev. 5.0	OK	Will not work
Video drivers for Rev. 6.0	OK	OK

Network Board

The Ethernet 10/100 BT PCI board is a proprietary PCI network board, with two network connectors.

Remote start   10 BaseT RJ-45 UTP connector

100 BaseT RJ-45 UTP connector
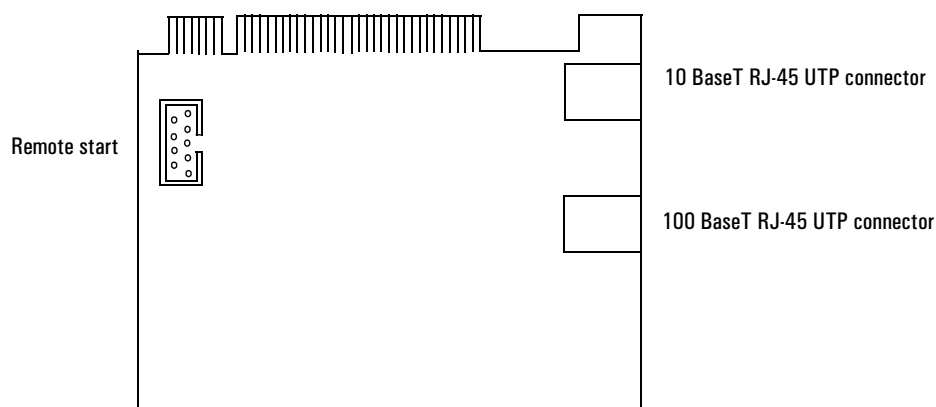
Connector	Properties	Configuration needs
10 BT	Remote power-on (RPO) and Remote wake-up (RWU)	Must have cable plugged between the remote start connector on the network board and the external start connector on the system board. Power-on integrated network field set to **Enabled**.
	10 Mbits per second operation	No requirements
100 BT	Remote wake-up (RWU)	Suspend wake-up. Power-on integrated network field set to **Enabled**. External cable not needed
	100 Mbits per second operation	No requirements

If the user complains of poor network performance, check whether the 100 BaseT connector is being used on a 10 BaseT network. (Doing so causes the 100 BaseT connector to switch automatically to a back-up 10 BaseT mode of operation, but with many retries and the consequent poor performance.)

Audio Controller Board

This ISA board is Plug-and-Play. It is supplied with the correct drivers, and does not require specific configuration when installed in this PC.

CD-Audio   Front panel

Line-In

Microphone-In

Line-Out

Speaker-Out

Internal
Speaker

Joystick
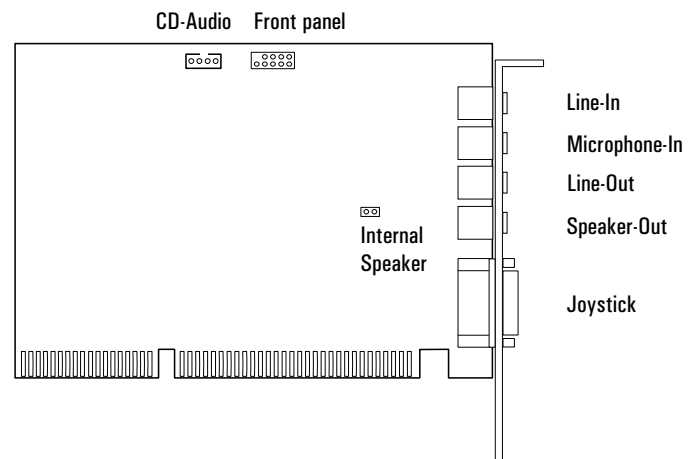
Setup Program

Configuration Menu

The `USB device` field is disabled (by default).

The `Modem` field is applicable to the *HP Vectra 500 PC*, not to the *HP Vectra XA 5/xxx PC*.

Power Menu

Remote Wake-Up and Remote Power-On, from the network, are controlled from this menu.

Complete the Questionnaire to Check Your Understanding

Draw a circle around each letter that corresponds with a correct answer. (There may be more than one correct answer to each question).

1 You have just replaced the system board, and you find that the PC no longer responds to remote wake-up. What do you do?

a Check that the product identification field, on the summary screen or in the *Setup* program, has been correctly set for the *HP Vectra XA 5/ xxx PC*.

b Check that the suspend-wakeup and the integrated network fields, in the *Setup* program, have been **enabled**.

c Check that the internal cable from the network board to the system board is inserted correctly.

2 The nine rows of the following table represent the data gathered from nine PCs. In some of the rows, one of the three fields is inconsistent with the other two. Strike out the data which are inconsistent.

	Marking on the "Intel Inside" Logo	BIOS Revision	Marking on the Warranty Label
a	Pentium Pro	HA.07.02	XA 5/200
b	MMX Pentium	GZ.07.03	XA 5/200
c	Pentium	GZ.07.03	XA 6/200
d	MMX Pentium	HA.07.02	XA 5/200
e	Pentium Pro	GZ.07.03	XA 5/200
f	MMX Pentium Pro	GZ.07.03	XA 6/180
g	Pentium Pro	GZ.07.03	XA 6/200
h	MMX Pentium	HA.07.02	XA 5/133
i	Pentium	HA.07.02	XA 5/200

3   How can you identify whether a Pentium MMX processor is installed on a given *HP Vectra XA 5/xxx PC*?

a   Look on the summary screen, by pressing ⎡Esc⎤ after a processor restart.

b   Run the *Setup* program, by pressing ⎡F2⎤ after a processor restart.

c   Look at the underside of the processor chip.

d   Run *HP TopTools 2.0 for Openview*.

4   Three clients (a, b and c) have reported having a faulty processor in their PC. They are able to read out to you the marking on the "Intel Inside" logo, on the warranty label, and on the summary screen. Which type of processor (P54, P55 or P6) do you take along to each site? Draw a circle round the correct answer for each of the three rows of the following table.

	Marking on the "Intel Inside" Logo	Marking on the Warranty Label	BIOS Revision	Which processor does the PC need?		
a	Pentium Pro	XA 6/200	GZ.07.03	**P54**	**P55**	**P6**
b	Pentium	XA 5/200	HA.07.02	**P54**	**P55**	**P6**
c	MMX Pentium	XA 5/200	HA.07.02	**P54**	**P55**	**P6**

Answers and Explanations

1 The PC no longer responds to remote wake-up. What do you do?

a Check that the product identification field, on the summary screen or *Setup* program, has been correctly set for the *HP Vectra XA 5/xxx PC*.

b Check that the suspend-wakeup and the integrated network fields, in the *Setup* program, have been **enabled**.

Response (a) is the principle answer: an incorrect setting could cause problems, since the BIOS for the V-line and 500 series do not always take the network setup into account. If the product field is wrong, it should be cleared as described on page 5. Response (b) is useful if response (a) fails to resolve the problem. Response (c) is irrelevant since the problem is with remote wake-up, not remote power-on.

2 Strike out the data which are inconsistent.

	Marking on the "Intel Inside" Logo	BIOS Revision	Marking on the Warranty Label
a	~~Pentium Pro~~	HA.07.02	XA 5/200
b	MMX Pentium	~~GZ.07.03~~	XA 5/200
c	~~Pentium~~	GZ.07.03	XA 6/200
d	MMX Pentium	HA.07.02	XA 5/200
e	Pentium Pro	GZ.07.03	~~XA 5/200~~
f	~~MMX Pentium Pro~~	GZ.07.03	XA 6/180
g	Pentium Pro	GZ.07.03	XA 6/200
h	MMX Pentium	HA.07.02	~~XA 5/133~~
i	Pentium	HA.07.02	XA 5/200

3 How can you identify whether a Pentium MMX processor is installed?

c Look at the underside of the processor chip.

Reading the marking on the "Intel Inside" logo is a quicker method, but cannot be relied upon. It should be treated as a clue, not as a proof.

4 Which type of processor (P54, P55 or P6) do you take along to each site?

	Marking on the "Intel Inside" Logo	Marking on the Warranty Label	BIOS Revision	Which processor does the PC need?		
a	Pentium Pro	XA 6/200	GZ.07.03			**P6**
b	Pentium	XA 5/200	HA.07.02	**P54**		
c	MMX Pentium	XA 5/200	HA.07.02		**P55**	

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